

# TC-FX205/FX220

## SERVICE MANUAL



TC-FX205 (Silver Type)

Note: TC-FX205 is a stereo cassette deck unit in SEN-205.



TC-FX220 (Black Type)

TC-FX205:  
US Model  
AEP Model  
UK Model  
E Model

TC-FX220:  
US Model  
Canadian Model  
AEP Model  
UK Model  
E Model

### SPECIFICATIONS

#### TC-FX205

Recording system	4-track 2-channel stereo
Frequency response	DOLBY NR OFF (DIN) With TYPE IV cassette (Sony METAL-ES cassette) 30 - 15,000 Hz ( $\pm 3$ dB) With TYPE II cassette (Sony UCX cassette) 30 - 14,000 Hz ( $\pm 3$ dB) With TYPE I cassette (Sony HF-S cassette) 30 - 13,000 Hz ( $\pm 3$ dB)
Wow and flutter	0.08% WRMS (NAB) $\pm 0.2\%$ (DIN)

#### General

Dimensions	Approx. 430 x 105 x 250 mm (w/h/d) (17 x 4 $\frac{1}{4}$ x 9 $\frac{7}{8}$ inches) incl. projecting parts and controls
Weight	Approx. 2.9 kg (6 lb 7 oz) net


— Continued on next page —

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.


Tape Transport Mechanism Type

TCM-C8F

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.



STEREO CASSETTE DECK  
**SONY**®

TC

# TC-FX205/FX220

## TC-FX220

Recording system 4-track 2-channel stereo  
Fast-forward and rewind time  
Approx. 100 sec. (with C-60 cassette)  
Bias frequency 105 kHz  
Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch	OFF	ON
TYPE IV (Sony METAL-ES)		55 dB	65 dB
TYPE II (Sony UCX)		55 dB	63 dB
TYPE I (Sony HF-S)		52 dB	61 dB

Total harmonic distortion  
1.0% (with Sony METAL-ES cassettes)

Frequency response

### DOLBY NR OFF

- With TYPE IV cassette (Sony METAL-ES)  
20 - 17,000 Hz  
30 - 15,000 Hz ( $\pm 3$  dB)  
30 - 13,000 Hz ( $\pm 3$  dB, 0 VU recording)  
30 - 15,000 Hz (DIN)
- With TYPE II cassette (Sony UCX)  
20 - 17,000 Hz  
30 - 14,000 Hz ( $\pm 3$  dB)  
30 - 14,000 Hz (DIN)
- With TYPE I cassette (Sony HF-S)  
20 - 16,000 Hz  
30 - 13,000 Hz (DIN)

Wow and flutter 0.08% WRMS (NAB)  
 $\pm 0.2\%$  (DIN)

## Inputs

Microphone inputs (phone jacks)  
Sensitivity 0.25 mV ( $-70$  dB)  
For a low-impedance microphone  
Line inputs (phono jacks)  
Sensitivity 77.5 mV ( $-20$  dB)  
Input impedance 47 kilohms

## Outputs

Line outputs (phono jacks)  
Output level 0.44 V ( $-5$  dB) at load  
impedance 50 kilohms  
Load impedance over 10 kilohms  
Headphone output (stereo phone jack)  
Output level  $-28$  dB at a  
load impedance of 8 ohms

## General

### Power requirements

AEP model: 220 V ac, 50/60 Hz  
(240 V ac adjustable by authorized  
Sony personnel)  
UK model: 240 V ac, 50/60 Hz  
(220 V ac adjustable by authorized  
Sony personnel)  
US, Canadian model: 120 V ac, 60 Hz  
E model: 120 or 220-240 V ac adjustable,  
50/60 Hz

### Power consumption

8 watts

### Dimensions

Approx.  $430 \times 105 \times 250$  mm (w/h/d)  
( $17 \times 4\frac{1}{4} \times 9\frac{7}{8}$  inches)

### Weight

including projecting parts and controls  
Approx. 3.3 kg (7 lbs 5 oz)

## SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

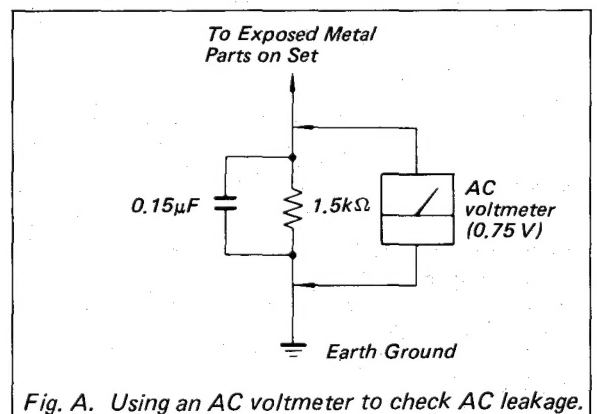
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

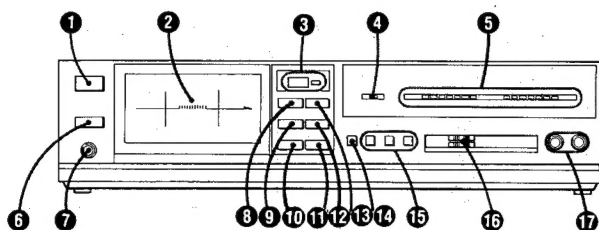
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



## FUNCTION OF CONTROLS



**1 POWER switch** (TC-FX220 only)

**2 Cassette holder**

**3 TAPE COUNTER and RESET button**

The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the RESET button.

**4 REC indicator**

This indicator lights when the **●** button is pressed.

**5 LED PEAK LEVEL METERS**

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode.

**6 ▲ (eject) button**

Press this button to open the cassette holder.

**7 HEADPHONES jack** (stereo phone jack)  
(TC-FX220 only)

**8 ◀◀ REW (rewind) button**

Press this button to rewind the tape.

**9 ■ STOP button**

**10 ● REC (record) button**

**11 || PAUSE button**

**12 ► FWD (forward) button**

**13 ►► FF (fast-forward) button**

Press this button to advance the tape rapidly.

**14 DOLBY NR\* switch**

To record with the Dolby NR (Noise Reduction) process, depress this switch (ON). To record without the Dolby NR process, press to release this switch (OFF). When playing back, set this switch to the same position used in recording.

\* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

**15 TAPE select buttons**

Depress one of the TAPE select buttons, depending on which type of tape you use. The optimum bias current adjustment for recording and the optimum equalization adjustment for both recording and playback are set.

**16 REC LEVEL (recording level) controls**

These controls adjust the recording level.

**17 MIC jacks** (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

Difference between TC-FX205 and TC-FX220.

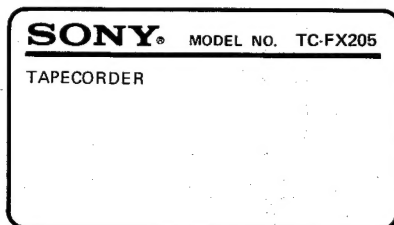
	TC-FX205	TC-FX220
Power Transformer (T901)	X	○
Headphones Jack (J302)	X	○
Headphone Amp. (IC302)	X	○
Power Supply Connector (CN304)	○	X

TC-FX205 is a stereo cassette deck unit in SEN-205 (stereo component system).

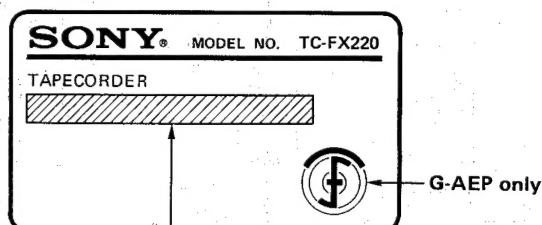
## MODEL IDENTIFICATION

— Specification label on jack plate —

TC-FX205



TC-FX220



US, Canadian model: AC: 120V 60 Hz 8W

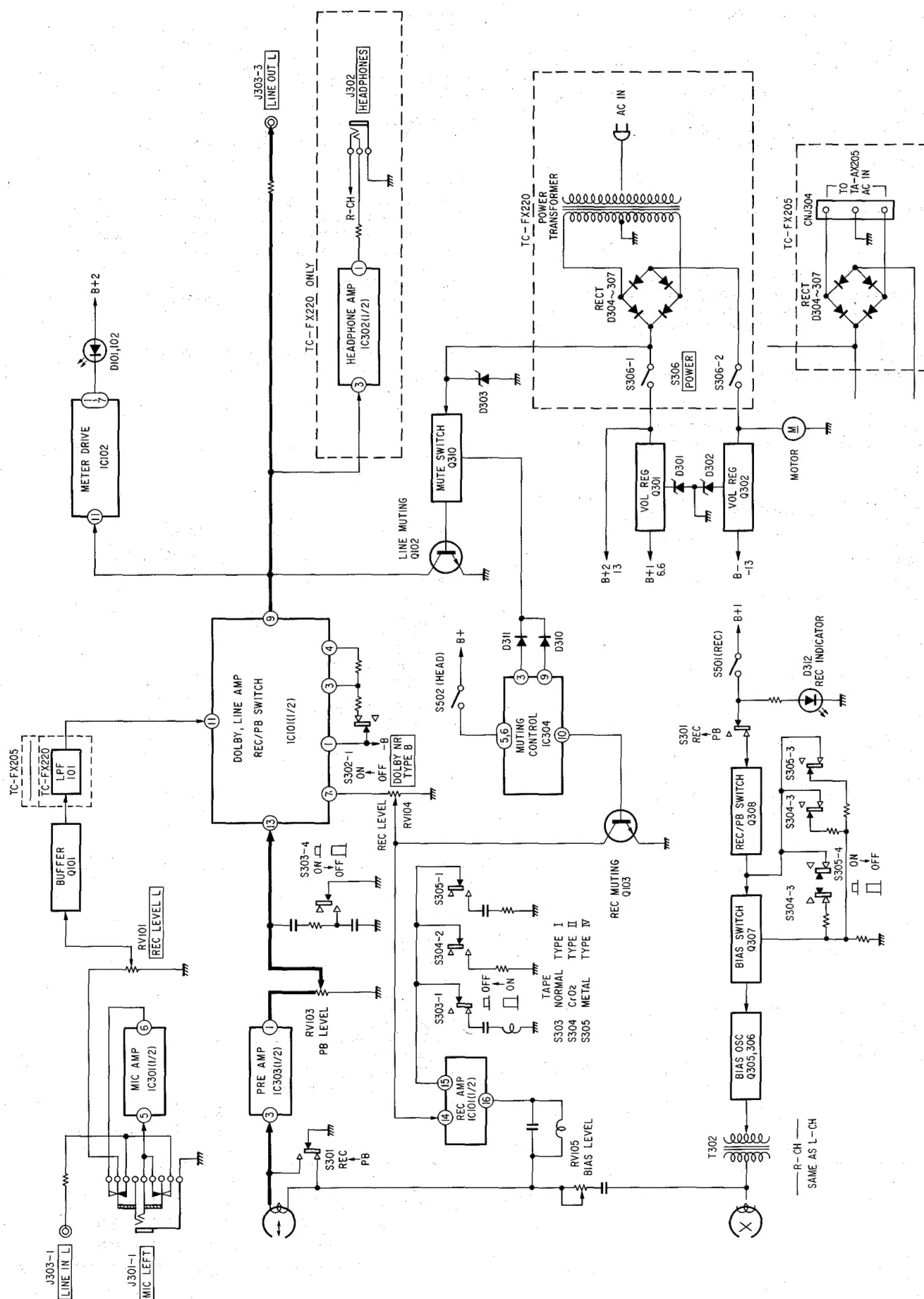
AEP model: AC: 220V 50/60 Hz 8W

UK model: AC: 240V 50/60 Hz 8W

E model: AC: 120, 220, 240V 50/60 Hz 8W

## SECTION 1

### BLOCK DIAGRAM

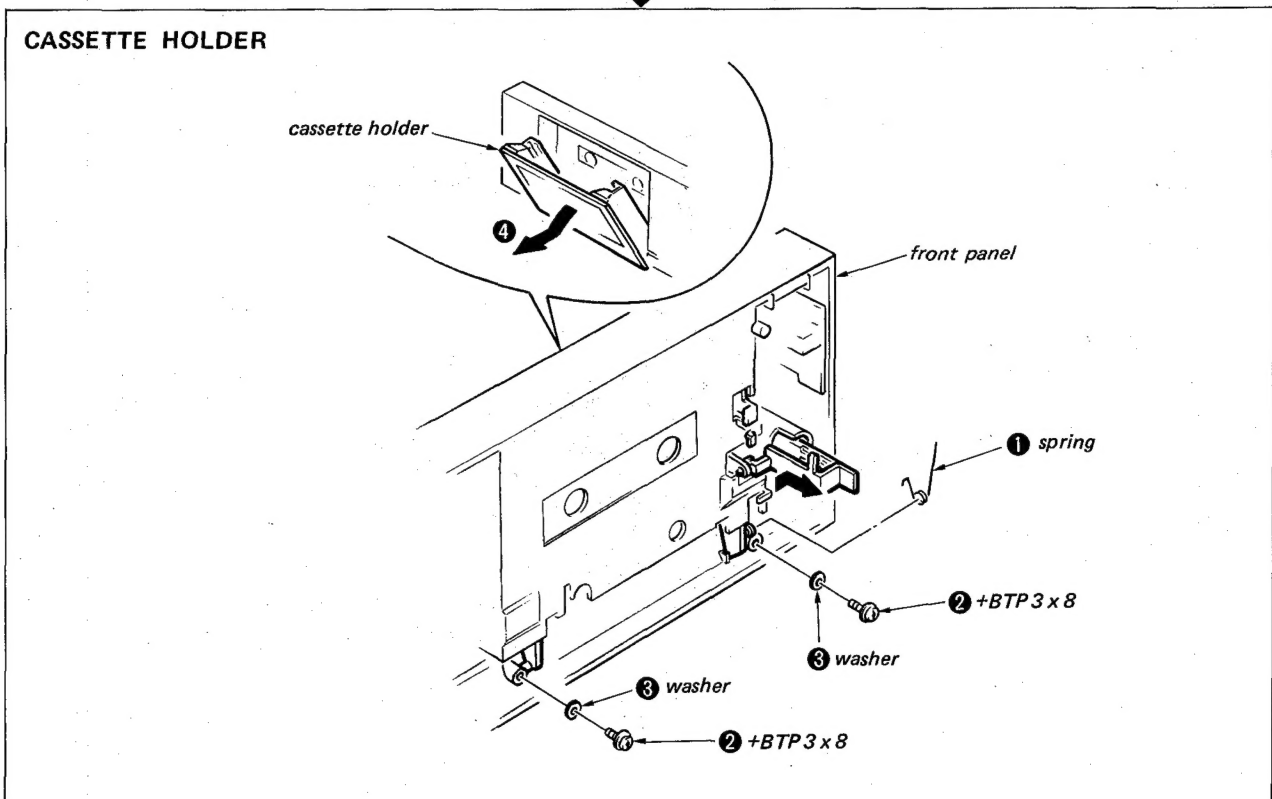
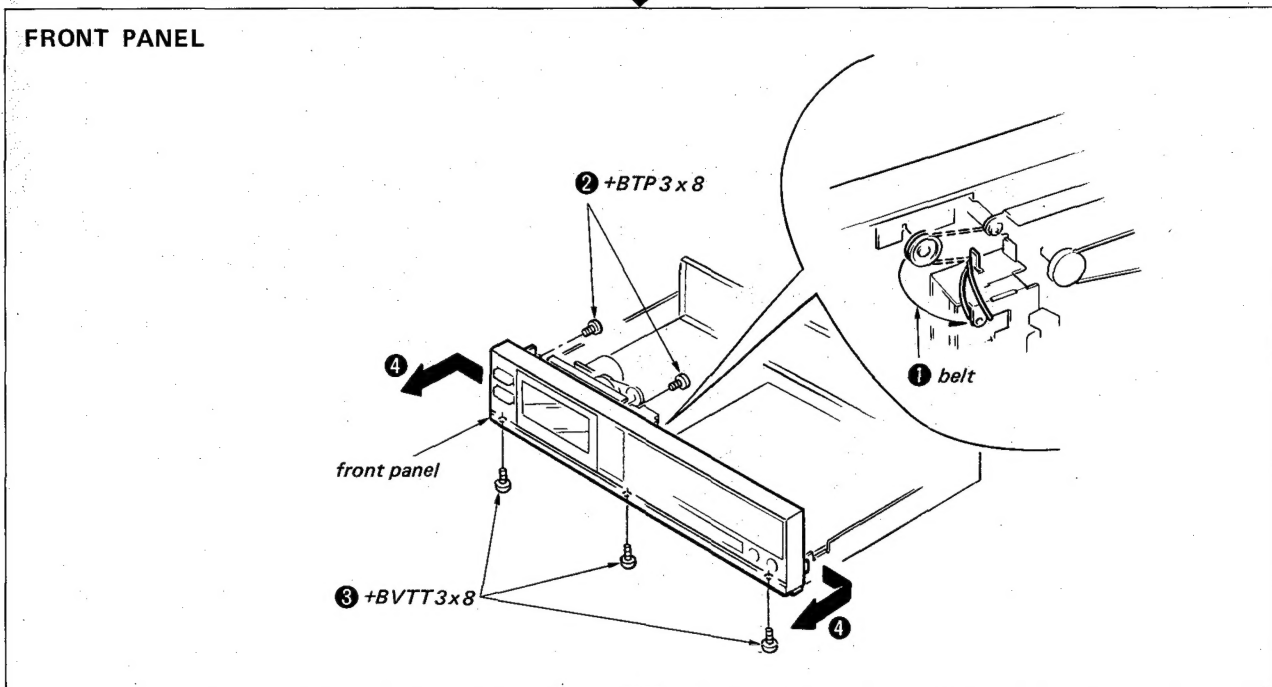




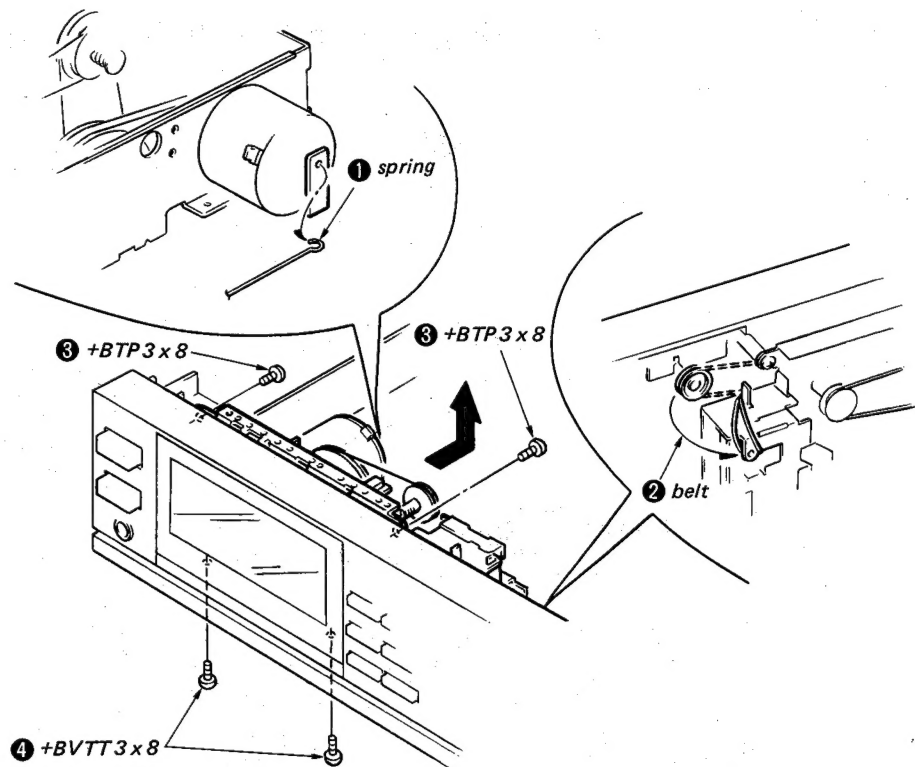
## SECTION 2 DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.

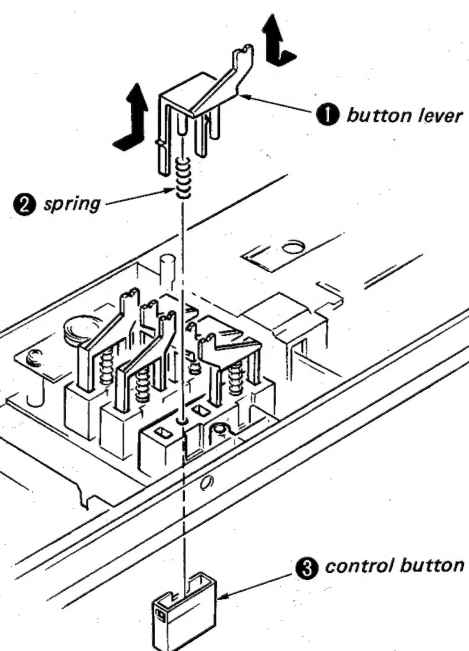
**Remove the case.**  
(four screws)



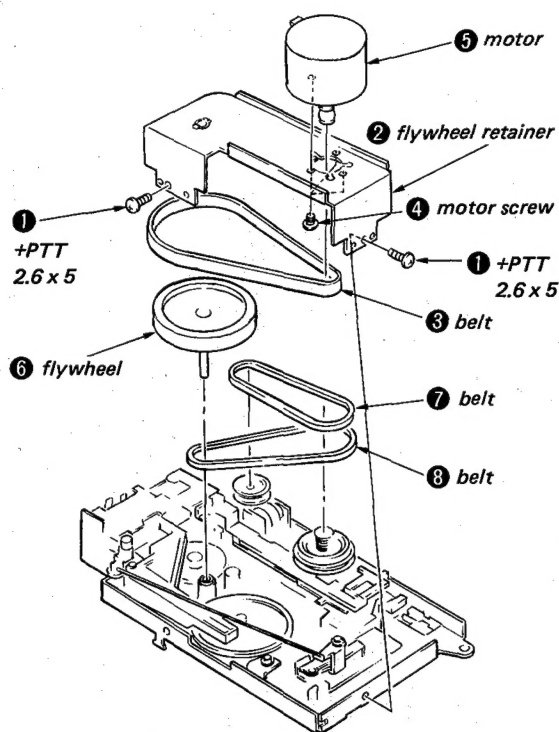
**TRANSPORT MECHANISM**



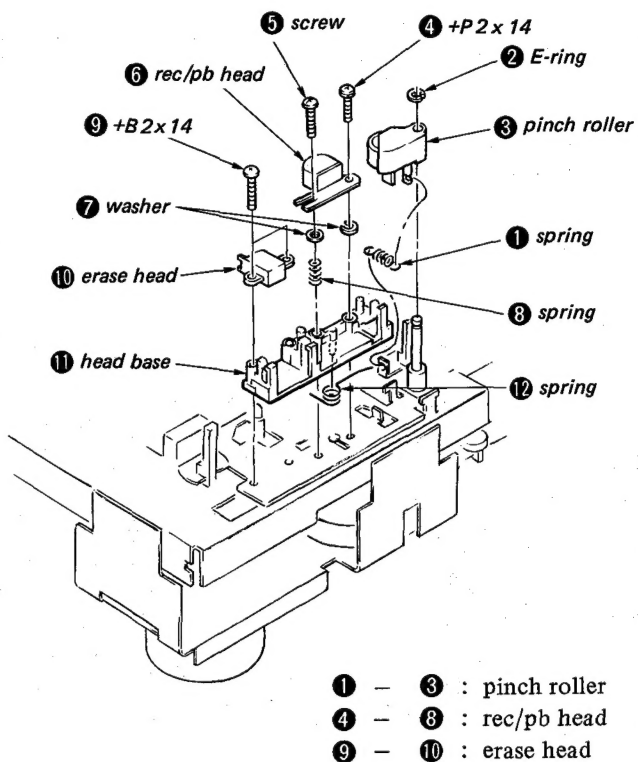
**CONTROL BUTTON**



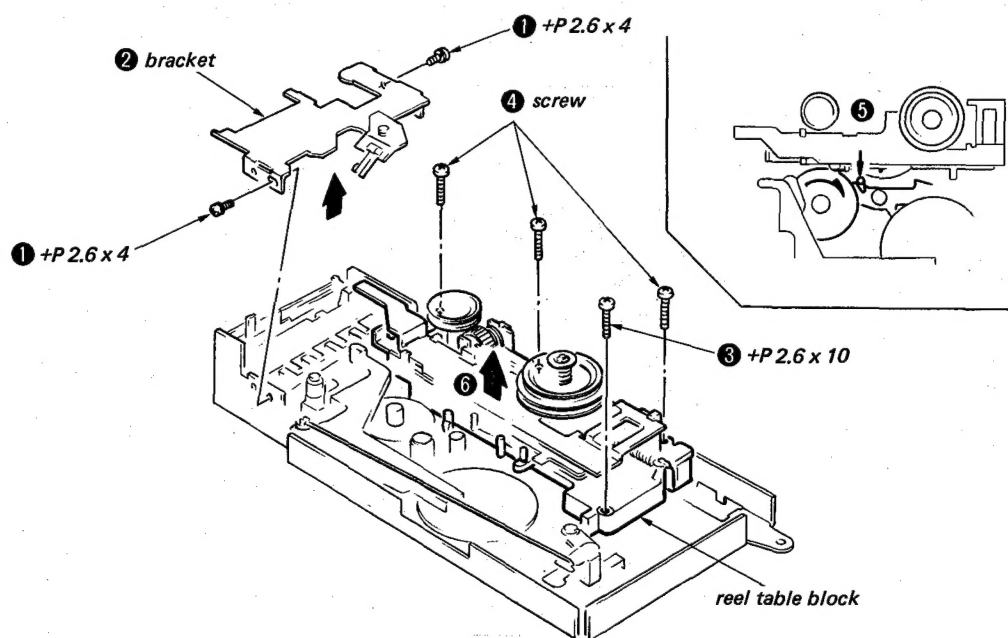
MOTOR, FLYWHEEL, BELT



REC/PB HEAD, ERASE HEAD, PINCH ROLLER



REEL TABLE BLOCK



## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS

No mechanical adjustments applied to this unit.

#### • Torque Measurement

Mode	Torque Meter	Torque
FWD	CQ-102C	40 – 70 g•cm (0.55 – 0.97 oz•inch)
FF	CQ-201B	70 – 150 g•cm (0.97 – 2.07 oz•inch)
REW	CQ-201B	70 – 150 g•cm (0.97 – 2.07 oz•inch)
FWD back tension	CQ-102C	2 – 6 g•cm (0.028 – 0.083 oz•inch)

### 3-2. ELECTRICAL ADJUSTMENTS

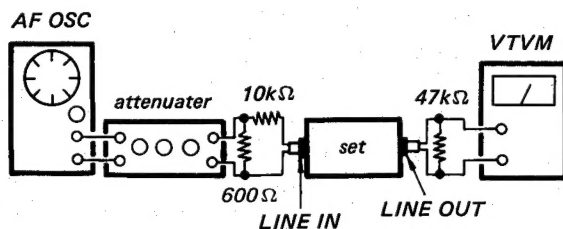
**Note:** The adjustment should be performed in the order given in this service manual.  
The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE switches according to the tape as follows.

Tape	Tape Switch
CS-17	TYPE I NORMAL
CS-26	TYPE II CrO <sub>2</sub>
CS-40	TYPE IV METAL

- Switches and controls should be set as follows unless otherwise specified.  
DOLBY NR switch: OFF  
TAPE SELECT switch: TYPE I NORMAL
- Standard Record:  
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

#### — Record Mode —



#### Standard Input Level

	MIC	LINE IN
source impedance	300Ω	10kΩ
input level	0.77 mV (–60 dB)	0.25 V (–10 dB)

#### Standard Output Level

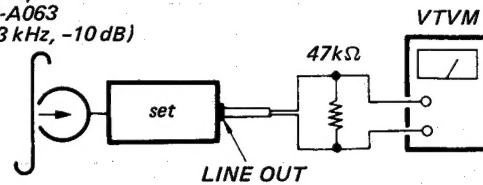
	HEADPHONES	LINE OUT
load impedance	8Ω	47kΩ
output level	31 mV (–28 dB)	0.435 V (–5 dB)

### Record/playback Head Azimuth Adjustment

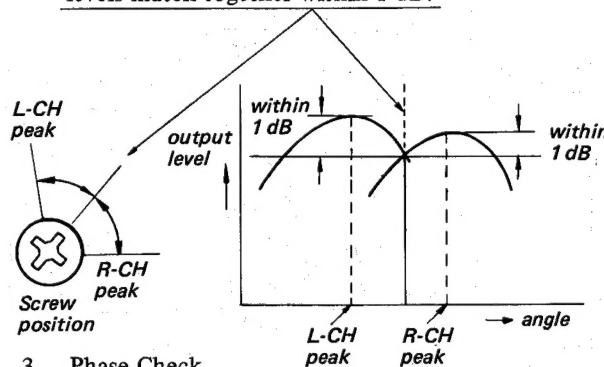
#### Procedure:

- Mode: playback

test tape  
P-4-A063  
(6.3 kHz, –10 dB)



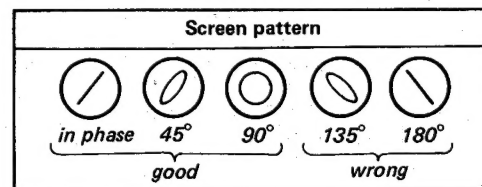
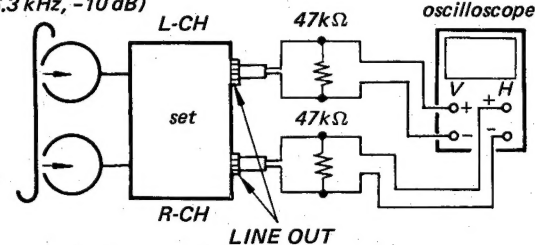
- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



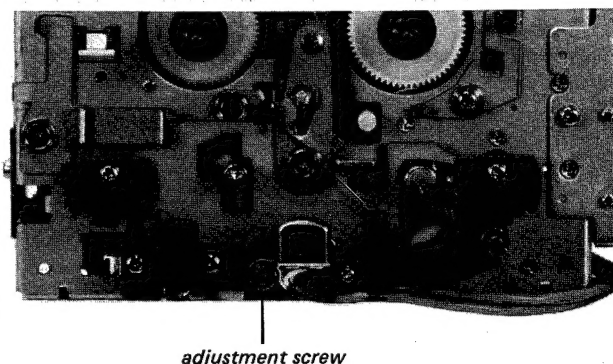
- Phase Check

Mode: playback

test tape  
P-4-A063  
(6.3 kHz, –10 dB)



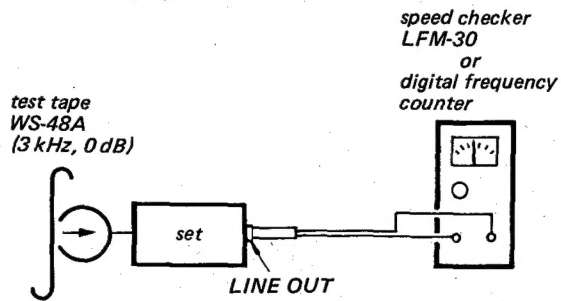
#### Adjustment Location:



### Tape Speed Adjustment

#### Procedure:

Mode: playback

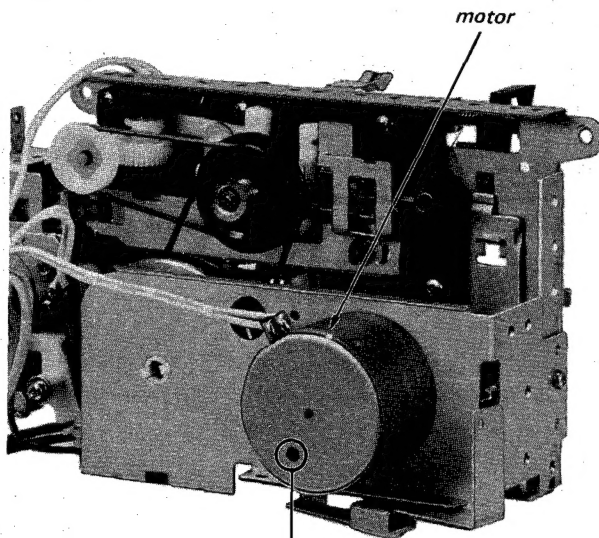


#### Specification:

Speed checker	Digital frequency counter
$\pm 0.3\%$	2,990 ~ 3,010 Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25 Hz).

#### Adjustment Location:

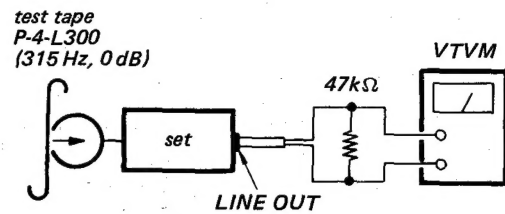


Adjust the tape speed by using screwdriver.

### Playback Level Adjustment

#### Procedure:

Mode: playback



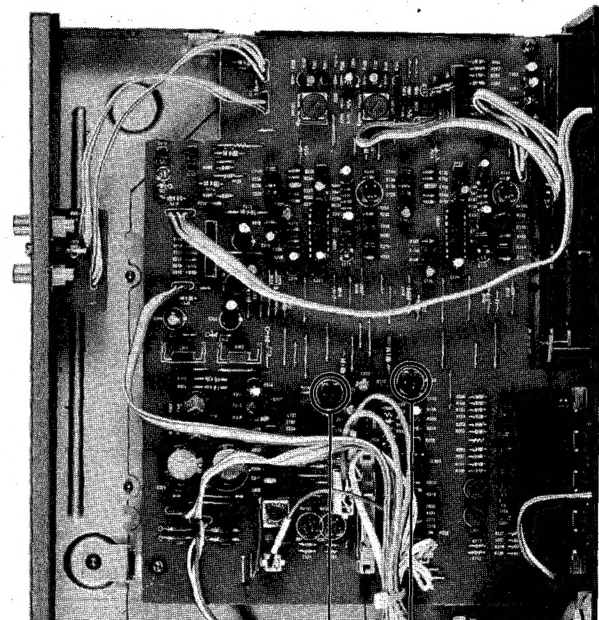
#### Specification:

LINE OUT level: 0.45 ~ 0.50 V  
(-4.9 ~ -3.9 dB)

Level difference between channels:  
less than 0.5 dB

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

#### Adjustment Location:



RV203  
(R-CH)

RV103  
(L-CH)

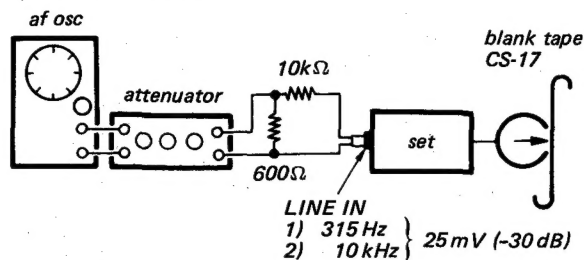
## Record Bias Adjustment

### Setting:

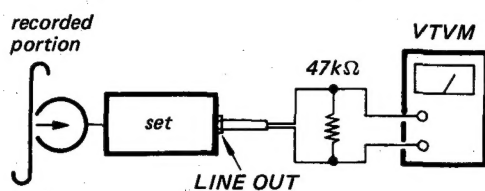
REC LEVEL control: standard record  
(See page 8)

### Procedure:

1. Mode: record

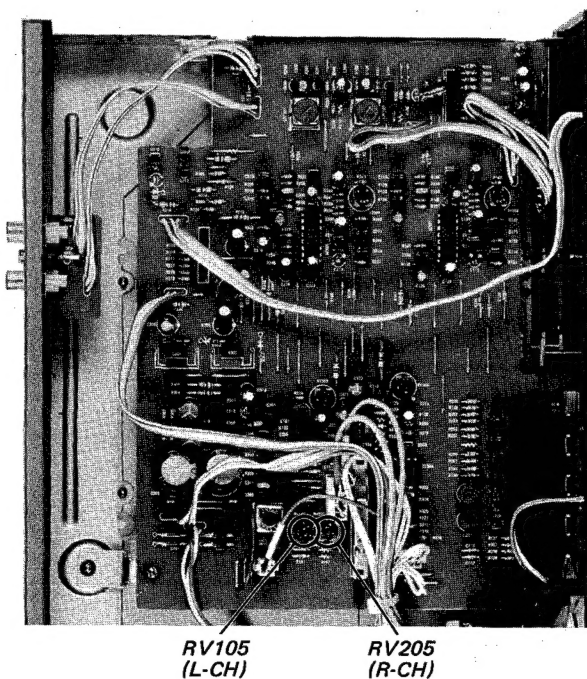


2. Mode: playback



Play back the tape recorded in step 1.  
Confirm that the LINE OUT level of 10 kHz signal is 0 dB relative to that of 315 Hz. If not, adjust the RV105 (L-CH), RV205 (R-CH) and repeat steps 1 and 2.

### Adjustment Location:



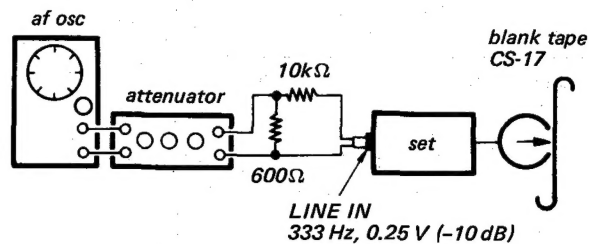
## Record Level Adjustment

### Setting:

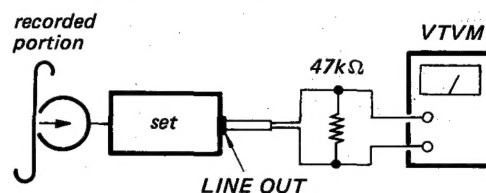
REC LEVEL control: standard record  
(See page 8)

### Procedure:

1. Mode: record



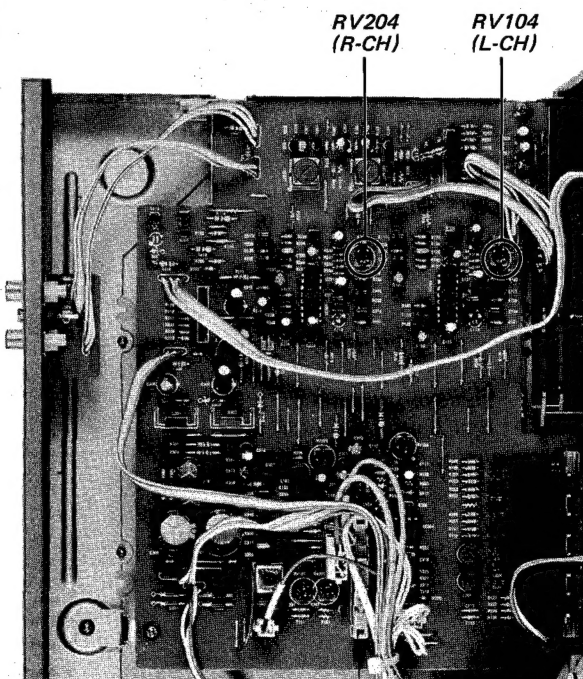
2. Mode: playback



### Specification:

LINE OUT level: 0.41 ~ 0.46 V  
(-5.5 ~ -4.5 dB)


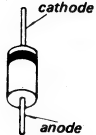
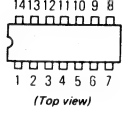

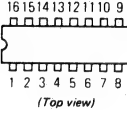

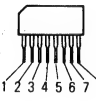
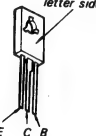


### Adjustment Location:





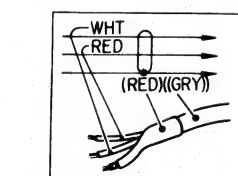
## SECTION 4 DIAGRAMS

### • Semiconductor Lead Layouts

<b>NJM4562D-D</b>  (Top view)	<b>HZ7C1L</b> <b>RD5.1E-L1</b> <b>10E-2</b>  cathode anode
<b>MB84011B</b>  (Top view)	<b>GL-9PR4</b>  anode cathode
<b>CX174-2</b> <b>IR2E02</b>  (Top view)	<b>2SA733-P</b> <b>2SC2001</b>  E C B
<b>M5218L</b> 	<b>2SD809-K</b>  letter side E C B
<b>1SS202-1</b>  cathode anode	<b>2SC2785-E</b>  letter side E C B

### Note:

- Color code of sleeving over the end of the jacket.



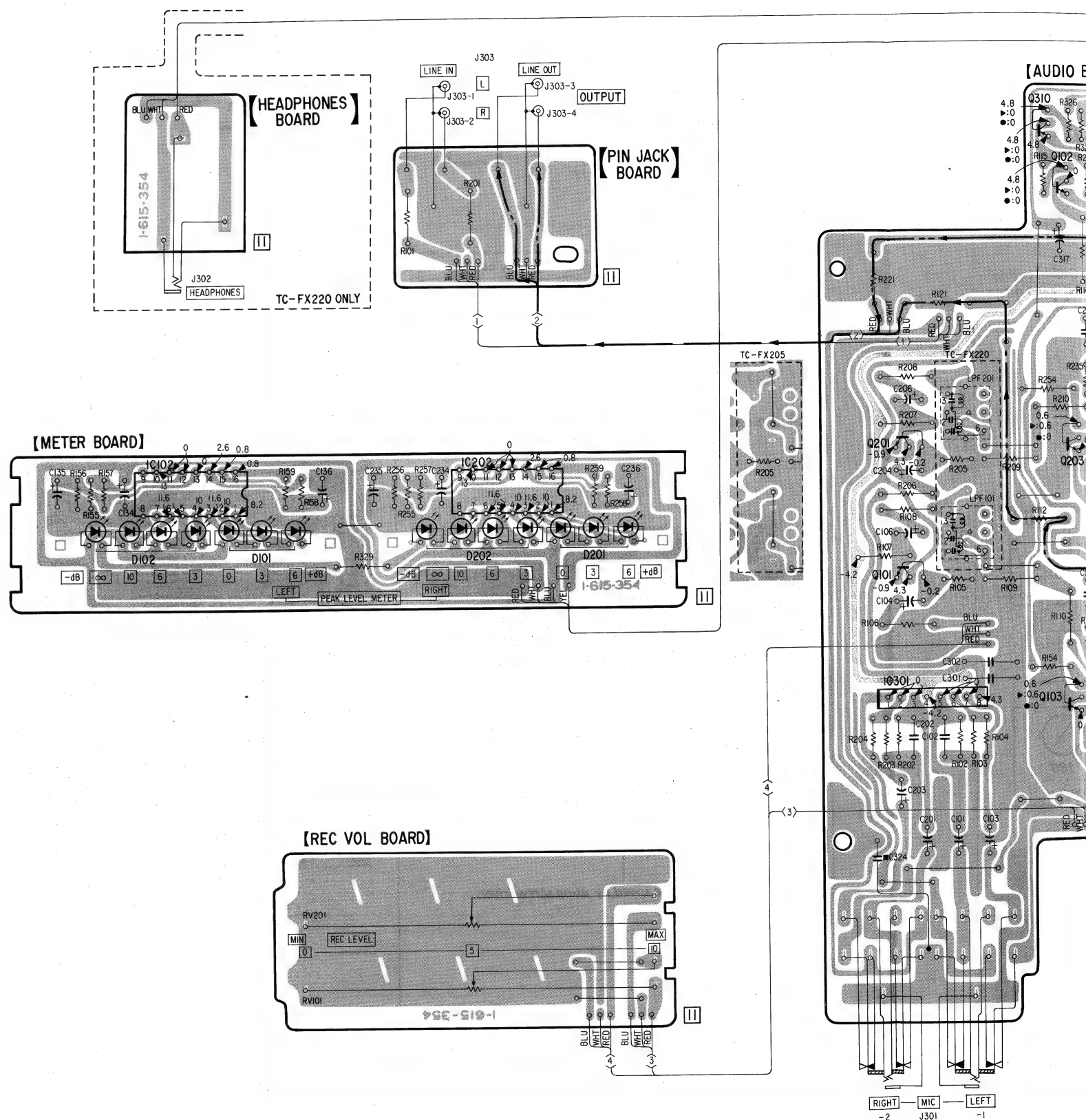
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : indicates side identified with part number.
- : signal path
- : L-CH signal path
- : R-CH signal path
- : B+ pattern
- : B- pattern

## TC-FX205/FX220 TC-FX205/FX220

### 4-1. MOUNTING DIAGRAM

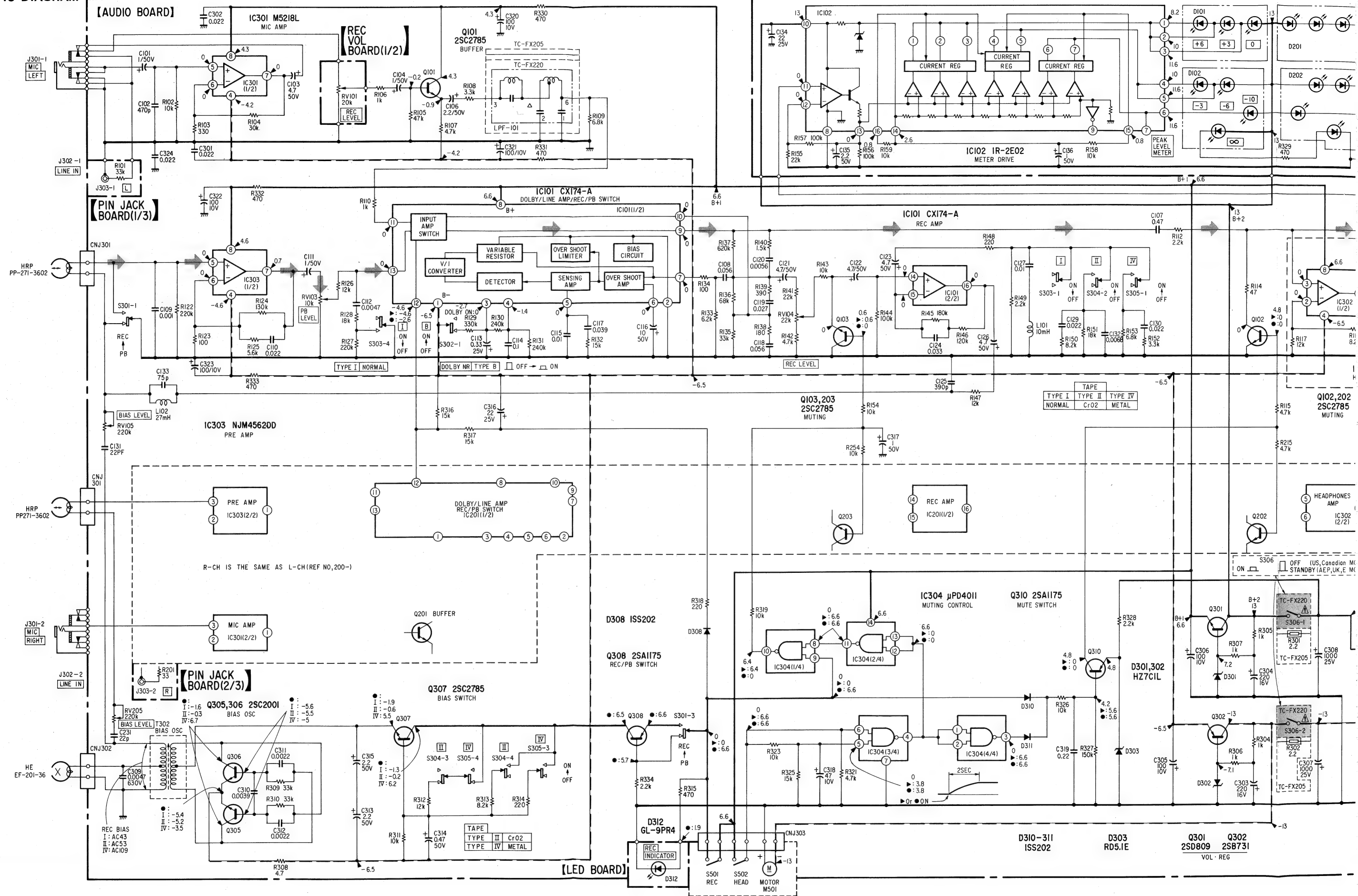
— Conductor —

Q	1	2	3	4	5	6	7	8	9	10	11
IC	IC102					IC202				201 101 IC301	310 102 203 103
D	102	101			202		201				

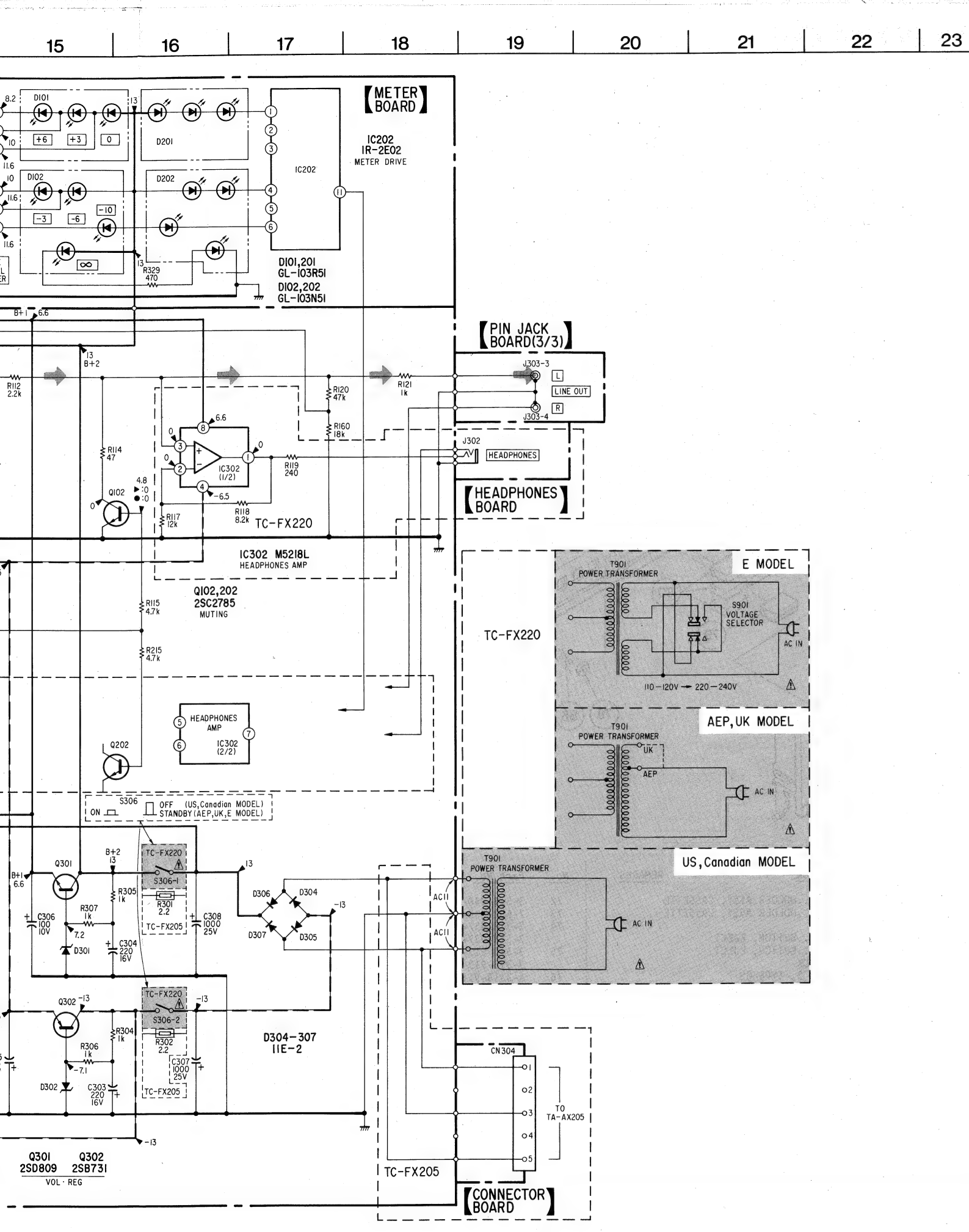




#### 4-2. SCHEMATIC DIAGRAM







TC-FX205/FX220

- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\text{F}$  50WV or less are not indicated except for electrolytics and tantalums.
  - All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
  - $\rightarrow$  : signal path.
  - Components for right channel have same values as for left channel. Reference numbers are coded from 200.
  - $\triangle$  : internal component.
  - $\text{---}$  : B+ bus.
  - $\text{---}$  : B- bus.
  - $\square$  : adjustment for repair.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Voltages are dc with respect to ground unless otherwise noted.
  - Readings are taken under no-signal conditions with VOM (50  $\text{k}\Omega/\text{V}$ ).
  - no mark : STOP
  - $\blacktriangleright$  : PLAY
  - $\bullet$  : REC
  - Voltage variations may be noted due to normal production tolerances.
  - Switches:

Ref. No.	Switch	Position
S301	RECORD/PLAY BACK	PLAY BACK
S302	DOLBY NR	OFF
S303	TYPE I NORMAL	ON
S304	TYPE II CrO <sub>2</sub>	OFF
S305	TYPE IV METAL	OFF
S306	POWER	{ OFF STANDBY
S501	RECORD	OFF
S502	HEAD	OFF
S901	VOLTAGE SELECT	110-120V

**Note:** Voltages are measured with a VOM (50 $\text{k}\Omega/\text{V}$ ).

**Note:** The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une trame et une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## SECTION 5

## EXPLODED VIEWS AND PARTS LIST

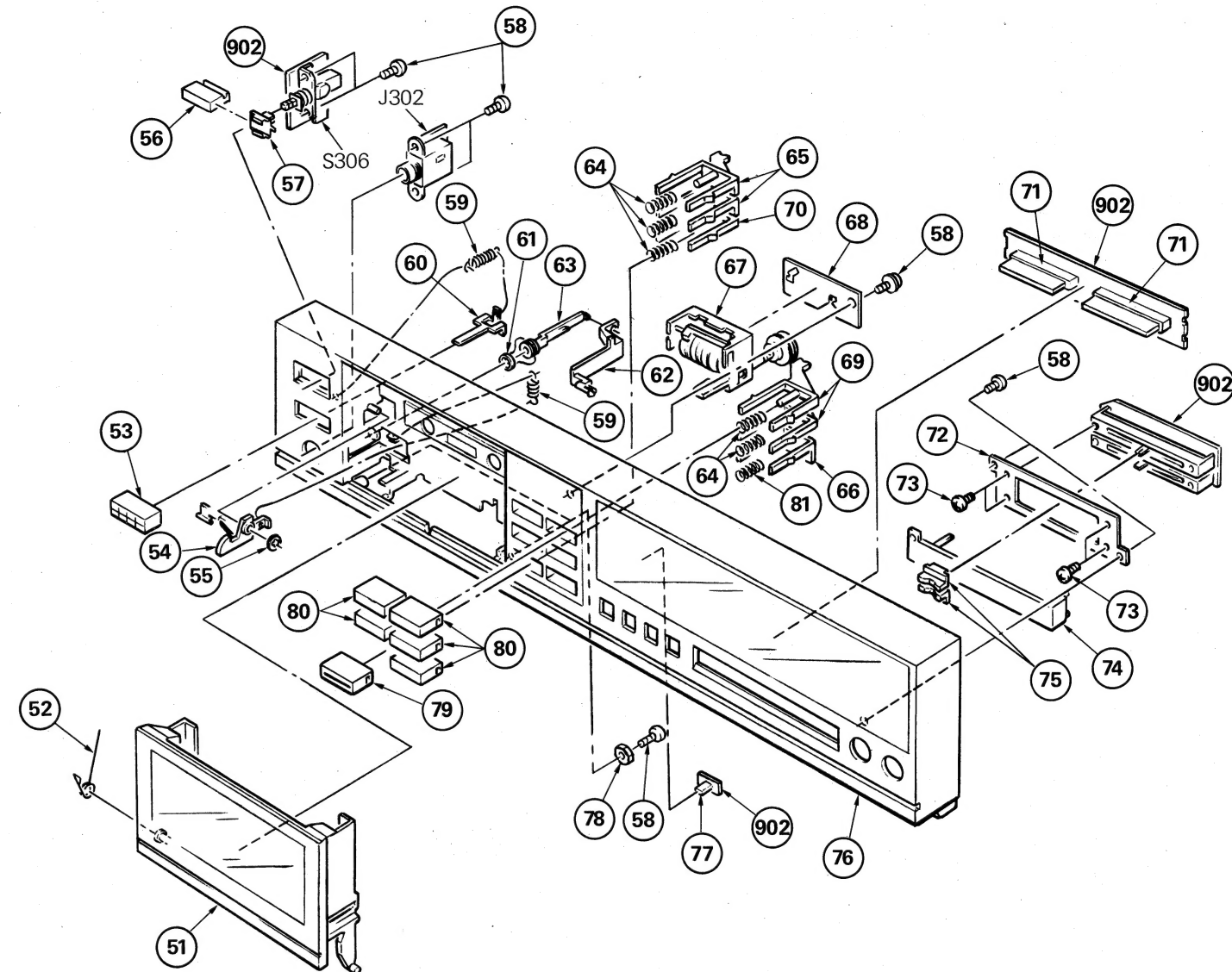
## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number on the remark column.

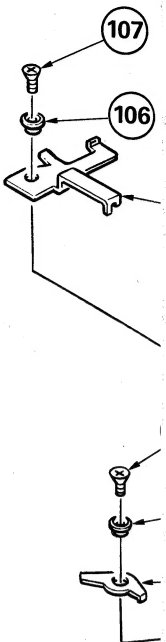
The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-2.



5-3.



No.	Part No.	Description	REMARKS
1	7-685-872-01	SCREW BVTT 3X8	
2	7-685-873-01	SCREW +BVTT 3X10 (S)	
3	*3-318-942-01	SPACER, REC LEVER	
4	*3-318-935-01	LEVER, REC	
5	3-530-181-XX	BELT, DETCTING	
6	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S	
7	3-703-079-21	(TC-FX220:UK)...LABEL, CAUTION (BACK)	
8	4-889-321-01	(SILVER)...SCREW	
9	4-889-321-11	(BLACK)...SCREW	
10	4-904-474-21	(SILVER)...CASE	
11	4-904-474-31	(BLACK)...CASE	
12	*3-323-464-01	(TC-FX220)...INSULATOR	
13	7-685-871-01	SCREW +BVTT 3X6 (S)	
14	*3-318-936-01	BRACKET, PC BOARD	
15	3-318-949-01	SPRING, TENSION	
16	*3-701-030-00	LABEL, SERIAL NUMBER	
17	(TC-FX220:AEP)...LABEL, MODEL NUMBER		
18	(TC-FX220:UK)...LABEL, MODEL NUMBER		
19	(TC-FX220:G-AEP)...LABEL, MODEL NUMBER		
20	(TC-FX205/220:US,Canadian,E)		
21	...LABEL, SERIAL NUMBER		

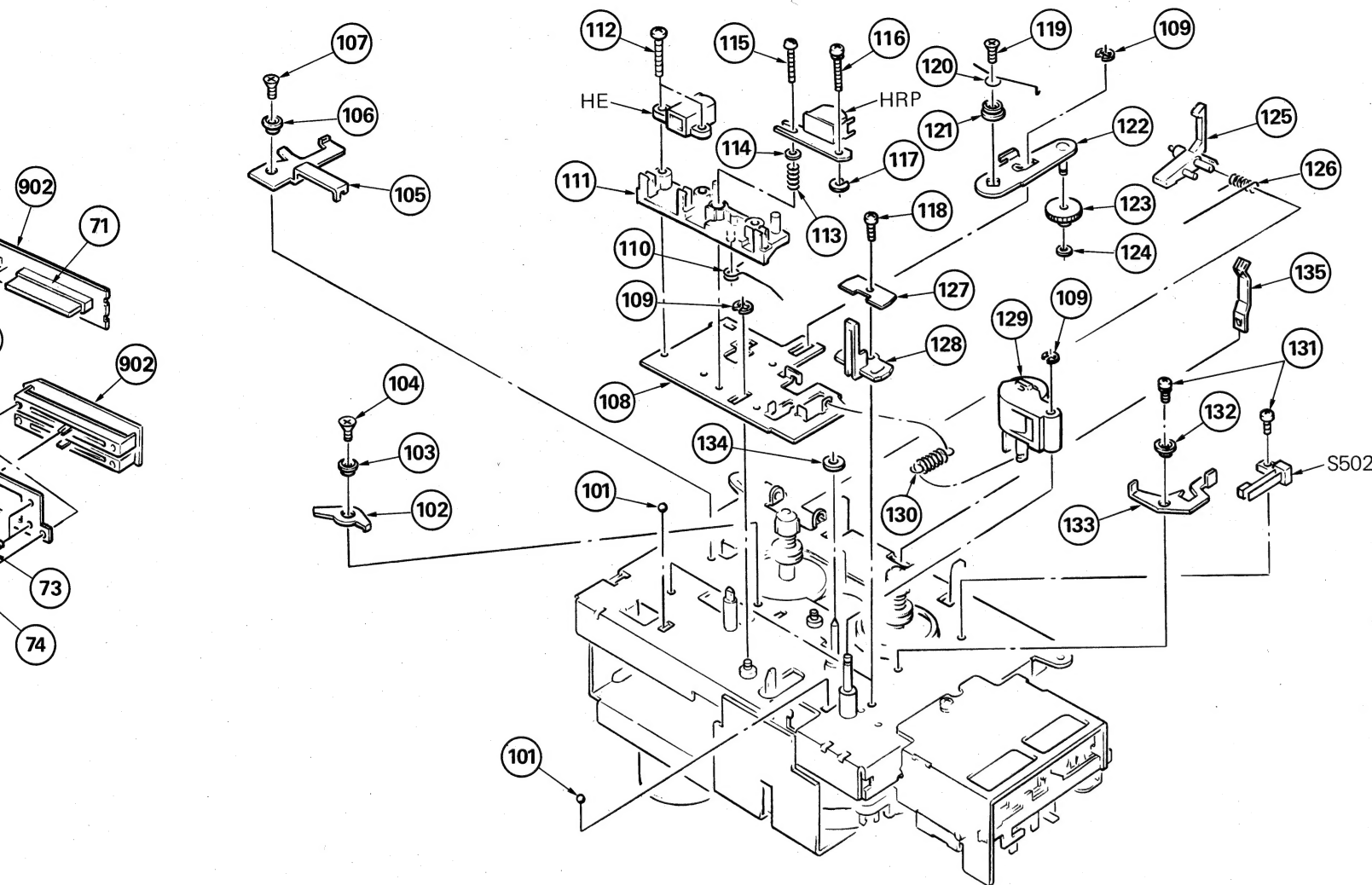
No.	Part No.	Description	REMARKS
16	7-685-134-19	(TC-FX220:E)...SCREW +BTP 2.6X8 TYPE-2	
17	3-703-244-00	(TC-FX220:AEP,UK,E)...BUSHING, CORD	
18	3-703-571-00	(TC-FX220:US,Canadian)...BUSHING (S) (4516), CORD	
19	*3-307-530-42	(TC-FX220:US,Canadian,UK,AEP)...PLATE, JACK	
20	*3-307-530-52	(TC-FX205)...PLATE, JACK	
21	*3-307-530-62	(TC-FX220:E)...PLATE, JACK	
22	*3-701-748-00	CLAMP	
23	*3-312-615-31	(TC-FX220)...HEAT SINK	
24	*3-318-956-01	PLATE, SHIELD	
25	*3-318-946-01	PLATE, BOTTOM	
26	3-576-731-11	FELT (H)	
27	4-855-804-11	(BLACK)...KNOB, SQUARE	
28	4-855-804-51	(SILVER)...KNOB, SQUARE	
29	*3-318-948-03	CHASSIS	
30	*1-534-817-XX	(TC-FX220:AEP)...CORD, POWER	
31	*1-551-472-00	(TC-FX220:E)...CORD, POWER	
32	*1-551-628-00	(TC-FX220:US,Canadian)...CORD, POWER	
33	*1-556-562-11	(TC-FX220:UK)...CORD, POWER	
34	*A-2056-267-A	(TC-FX220)...PC BOARD ASSY, AUDIO	
35	*A-2056-268-A	(TC-FX205)...PC BOARD ASSY, AUDIO	

No.	Part No.	Description	REMARKS
51	X-3318-917-1	(SILVER)...HOLDER ASSY, CASSETTE	
52	X-3318-918-1	(BLACK)...HOLDER ASSY, CASSETTE	
53	3-318-954-01	SPRING	
54	3-304-419-00	(SILVER)...BUTTON, EJECT	
55	3-304-419-31	(BLACK)...BUTTON, EJECT	
56	*3-318-953-01	LEVER, LOCK	
57	7-624-190-11	STOP RING 3, TYPE-CS	
58	3-318-911-01	(SILVER)(TC-FX220)...KNOB (POWER.L), T MOLD	
59	3-318-911-11	(BLACK)(TC-FX220)...KNOB (POWER.L), T MOLD	
60	*4-902-831-01	(TC-FX220)...JOINT (G), KNOB	
61	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S	
62	3-540-244-00	SPRING, TENSION	
63	*3-313-203-00	PLATE, SLIDE	
64	3-312-441-00	RING, PISTON	
65	3-318-952-01	LEVER, EJECT	
66	3-312-458-01	PISTON (A)	
67	3-570-064-02	SPRING, COMPRESSION	
68	*3-318-931-01	LEVER (A), BUTTON	
69	*3-318-933-01	LEVER (C), BUTTON	
70	1-548-589-21	COUNTER, TAPE (MIDDLE TYPE)	
71	*3-318-939-01	BRACKET, COUNTER	
72	*3-318-932-01	LEVER (B), BUTTON	
73	*3-318-934-01	LEVER (D), BUTTON	
74	3-318-941-01	SPACER, LED	

No.	Part No.	Description	REMARKS
72	3-318-940-01	BRACKET, CONTROL	
73	7-682-545-09	SCREW +B 3X4	
74	3-318-937-01	(SILVER)...PLATE, ORNAMENTAL, CONTROL	
75	3-318-937-11	(BLACK)...PLATE, ORNAMENTAL, CONTROL	
76	3-313-213-21	(SILVER)...BUTTON, REC CONTROL	
77	3-313-213-31	(BLACK)...BUTTON, REC CONTROL	
78	X-3318-911-1	(SILVER)(TC-FX220:AEP,UK,E)	
79	X-3318-912-1	(BLACK)(TC-FX220:US,Canadian)	
80	X-3318-913-1	(SILVER)(TC-FX220:US,Canadian)	
81	X-3318-914-1	(BLACK)(TC-FX220:AEP,UK,E)	
82	X-3318-915-1	(SILVER)(TC-FX205)...PANEL ASSY, FRONT	
83	X-3318-916-1	(BLACK)(TC-FX205)...PANEL ASSY, FRONT	
84	4-866-397-00	CUSHION, LED	
85	4-836-939-00	WASHER, 3.1	
86	3-318-950-11	BUTTON (A), CONTROL	
87	3-318-950-01	BUTTON (A), CONTROL	
88	4-858-582-00	SPRING, COMPRESSION	
89	*A-2056-267-A	(TC-FX220)...PC BOARD ASSY, AUDIO	
90	*A-2056-268-A	(TC-FX205)...PC BOARD ASSY, AUDIO	

No.	Part No.	Description	REMARKS
101	7-671-11		
102	3-596-15		
103	3-596-14		
104	3-596-16		
105	*3-596-16		
106	3-596-14		
107	3-596-16		
108	*3-596-16		
109	3-596-17		
110	3-596-10		
111	3-596-12		
112	7-621-77		
113	3-596-11		
114	3-596-16		
115	3-596-16		
116	7-621-25		
117	3-596-17		
118	3-596-16		

5-3.



REMARKS

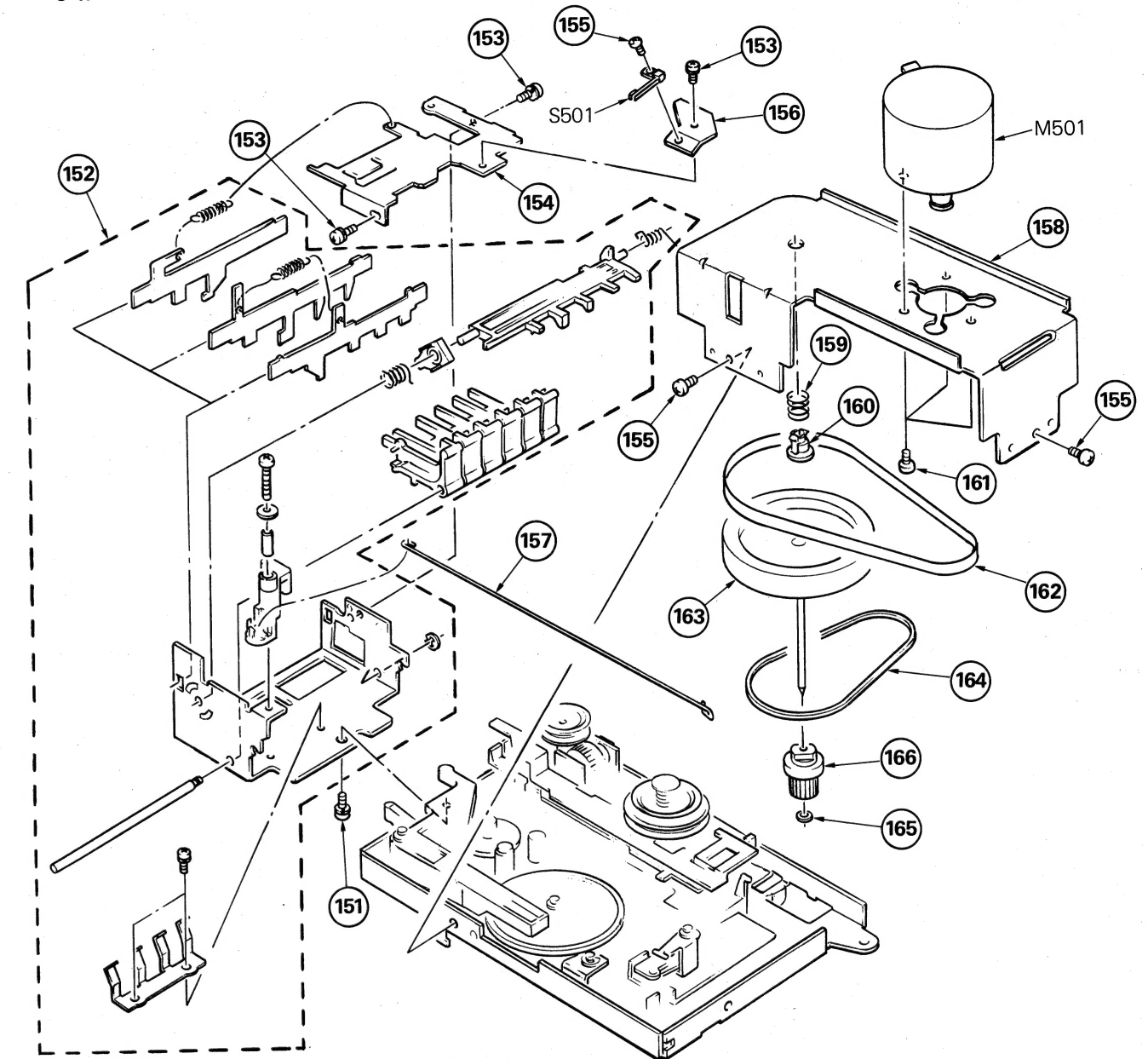
No.	Part No.	Description
101	7-671-113-02	STEAL, BALL 3
102	3-596-158-01	SHIFT (8A), BRAKE
103	3-596-140-01	COLLAR (3B), RETURN, PANEL
104	3-596-164-01	TAP TIGHT
105	*3-596-162-01	LEVER
106	3-596-141-01	COLLAR, SAFETY (8A)
107	3-596-163-01	SCREW (2.6X5)
108	*3-596-160-01	PANEL (8C-EGC), HEAD
109	3-596-172-01	RING, E
110	3-596-102-01	SPRING
111	3-596-123-01	BASE (8A), HEAD
112	7-621-772-70	SCREW +B 2X14
113	3-596-117-01	SPRING
114	3-596-169-01	FW (2.2X6.0X0.4)
115	3-596-165-01	BIND, +-
116	7-621-255-85	SCREW +P 2X14
117	3-596-173-01	WASHER (0.10), HEAD
118	3-596-167-01	SCREW (2.6X6.5)

REMARKS

No.	Part No.	Description
119	7-627-452-38	SCREW, PRECISION +K 2X5
120	3-596-118-01	SPRING
121	3-596-145-01	COLLAR, TAKE-UP (8A)
122	*X-3596-106-1	TAKE-UP ASSY (8B)
123	3-596-124-01	GEAR, TAKE-UP (8A)
124	3-596-177-01	WASHER
125	3-596-125-01	SENSOR (8A), REC
126	3-596-119-01	SPRING
127	3-596-147-01	RETAINER (9D), PANEL
128	3-596-121-01	GUIDE (9A), CASSETTE
129	X-3596-101-1	PINCH ROLLER ASSY (8A)
130	3-596-103-01	SPRING
131	7-621-773-86	SCREW +P 2.6X4
132	3-596-178-01	COLLAR
133	*3-596-179-01	ARM
134	3-596-146-01	NLW (2.4X6.0X0.50)
135	3-596-151-01	PLATE (8A), SP, PACK RETAINER

REMARKS

5-4.



No.	Part No.	Description
151	7-621-259-35	SCREW +P 2.6X5
152	X-3596-104-1	BUTTON ASSY (8AF), PUSH
153	7-621-773-86	SCREW +P 2.6X4
154	*3-596-159-01	BRACKET, AMS (8RA)
155	7-685-791-04	SCREW +PTT 2.6X5 (S)
156	*3-596-161-01	BRACKET, REC SWITCH (8D)
157	3-596-113-01	REC, JOINT 8A
158	*3-596-152-01	RETAINER (8A), FLYWHEEL

REMARKS

No.	Part No.	Description
159	3-596-101-01	RETAINER (SP) (9A), CAPSTAN
160	3-596-122-01	RETAINER (9A), CAPSTAN
161	3-596-166-01	SCREW (2.6X2.5)
162	3-596-139-01	BELT, FLAT
163	X-3596-105-1	FLYWHEEL ASSY (8A)
164	3-596-134-01	BELT, SQUARE
165	3-596-171-01	PSW (2.6X4.7X0.25)
166	3-596-133-01	GEAR, CAPSTAN (8A)

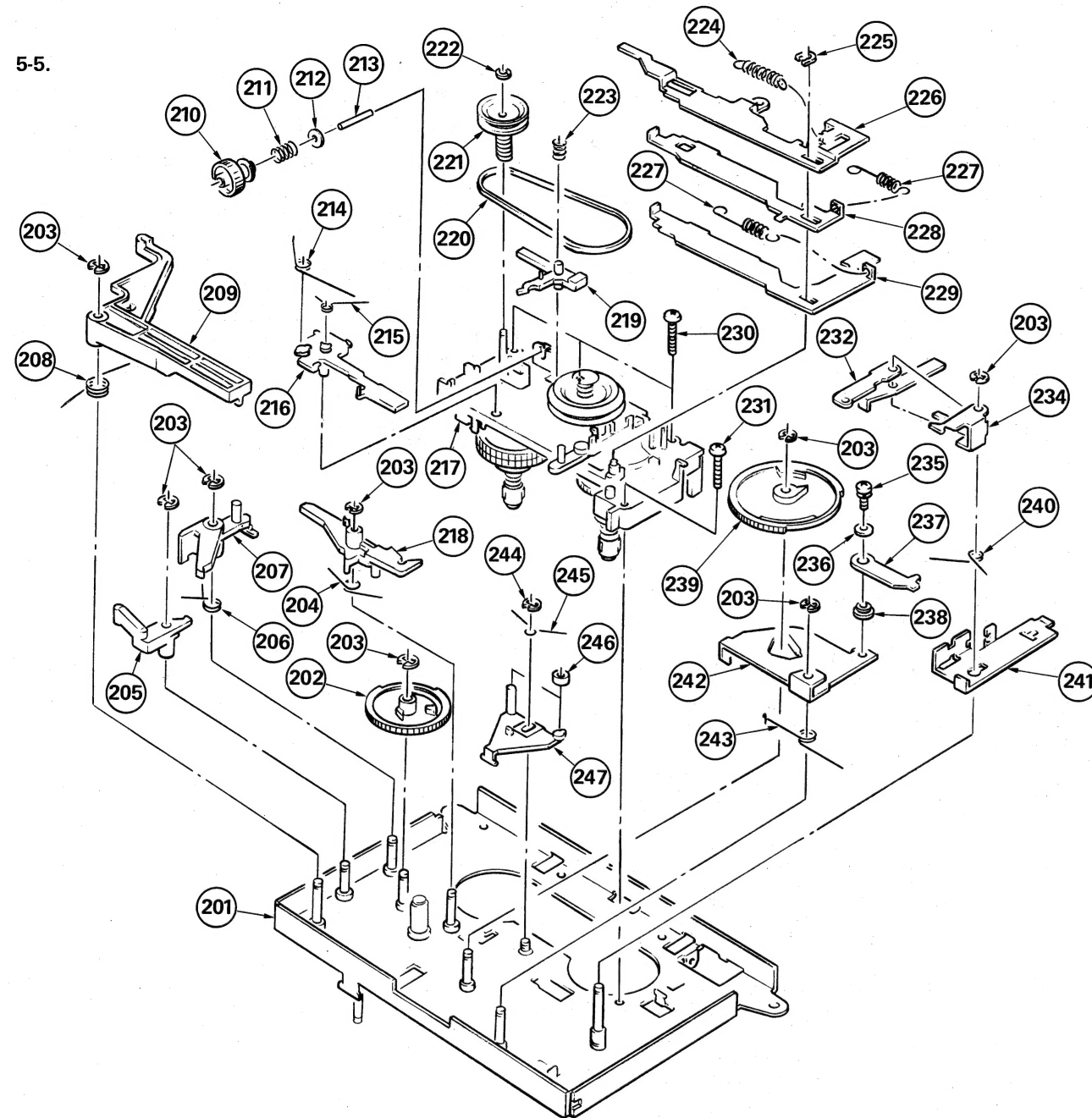
REMARKS

AUDIO  
AUDIO



# SECTION 6 ELECTRICAL PARTS LIST

5-5.



No.	Part No.	Description	REMARKS
201	*X-3596-107-1	RIVETING ASSY (8BA), CHASSIS	
202	3-596-136-01	GEAR, RF DRIVE (8B)	
203	3-596-172-01	RING, E	
204	3-596-105-01	SPRING	
205	3-596-128-01	LEVER, PAUSE TRIGGER (8A)	
206	3-596-106-01	SPRING	
207	3-596-129-01	LEVER, RF TRIGGER (8A)	
208	3-596-107-01	SPRING	
209	3-596-130-01	LEVER, RF TRIGGER (8A)	
210	X-3596-102-1	WORM ASSY (8BA), AUTO, GEAR	
211	3-596-115-01	SPRING	
212	3-596-176-01	PSW (2.0X8.0X0.25)	
213	3-596-144-01	SHAFT	
214	3-596-110-01	SPRING	
215	3-596-109-01	SPRING	
216	3-596-132-01	ARM, CANCEL (8A)	
217	X-3596-103-1	BASE ASSY (8D), REEL TABLE	
218	3-596-127-01	LEVER, RETURN (8A)	
219	3-596-131-01	ARM, AUTO (8A)	
220	3-596-120-01	BELT, SQUARE	
221	3-596-138-01	GEAR, RELAY PULLEY (8A)	
222	3-701-436-11	WASHER, 1.6	
223	3-596-114-01	SPRING	

No.	Part No.	Description	REMARKS
224	3-596-112-01	SPRING	
225	7-624-193-09	STOP RING (2.5) GRIP	
226	*3-596-153-01	LEVER, AUTO (8A)	
227	3-596-111-01	SPRING	
228	*3-596-156-01	LEVER, REW (8B)	
229	*3-596-155-01	LEVER, FF (8B)	
230	3-596-168-01	BIND	
231	7-621-259-65	SCREW +P 2.6X10	
232	*3-596-149-01	ARM, RP SWITCH (8A)	
233	*3-596-150-01	ARM, RP SHIFT (8A)	
234	7-621-770-67	SCREW +P 2.6X6	
235	3-596-170-01	FW (2.8X7.5X0.5)	
236	*3-596-154-01	LEVER, RP SELECT (8B)	
237	3-596-143-01	COLLAR, RP SELECT (8A)	
238	3-596-137-01	GEAR, DRIVE (8B)	
239	3-596-108-01	SPRING	
240	*3-596-148-01	LEVER, REC (8A)	
241	*3-596-157-01	ARM, PLAY (8-EGC)	
242	3-596-116-01	SPRING	
243	7-624-104-04	STOP RING 2.0, TYPE -E	
244	3-596-104-01	SPRING	
245	3-596-135-01	RUBBER, BRAKE	
246	3-596-126-01	ARM, BRAKE (8A)	
247			

## NOTE:

Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:  
MF:μF, PF:μμF.

RESISTORS  
All resistors are in ohms.  
F : nonflammable

COILS  
MMH : mH, UH : μH

SEMICONDUCATORS  
In each case, U : μ, for example:  
UA...: μA..., UPA...: μPA..., UPC...: μPC,  
UPD...: μPD...

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	<b>A</b> .1-534-817-XX	(TC-FX220:AEP).....CORD, POWER
	<b>A</b> .1-551-472-00	(TC-FX220:E).....CORD, POWER
	<b>A</b> .1-551-628-00	(TC-FX220:US,Canadian)....CORD, POWER
	<b>A</b> .1-556-562-11	(TC-FX220:UK).....CORD, POWER
902	*A-2056-267-A	(TC-FX220)...PC BOARD ASSY, AUDIO
902	*A-2056-268-A	(TC-FX205)...PC BOARD ASSY, AUDIO
C101	1-123-380-00	ELECT 1MF 20% 50V
C102	1-162-106-00	CERAMIC 470PF 10% 50V
C103	1-123-369-00	ELECT 4.7MF 20% 50V
C104	1-123-380-00	ELECT 1MF 20% 50V
C106	1-123-381-00	ELECT 2.2MF 20% 50V
C107	1-124-270-11	ELECT 0.47MF 20% 50V
C108	1-136-162-00	FILM 0.056MF 5% 50V
C109	1-162-110-00	CERAMIC 0.001MF 10% 50V
C110	1-136-157-00	FILM 0.022MF 5% 50V
C111	1-123-380-00	ELECT 1MF 20% 50V
C112	1-162-112-00	CERAMIC 0.0047MF 30% 25V
C113	1-131-344-00	ELECT(SOLID) 0.33MF 20% 25V
C114	1-136-165-00	FILM 0.1MF 5% 50V
C115	1-136-153-00	FILM 0.01MF 5% 50V
C116	1-123-356-00	ELECT 10MF 20% 50V
C117	1-136-160-00	FILM 0.039MF 5% 50V
C118	1-136-162-00	FILM 0.056MF 5% 50V
C119	1-136-158-00	FILM 0.027MF 5% 50V
C120	1-130-480-00	MYLAR 0.0056MF 5% 50V
C121	1-123-369-00	ELECT 4.7MF 20% 50V
C122	1-123-369-00	ELECT 4.7MF 20% 50V
C123	1-123-369-00	ELECT 4.7MF 20% 50V
C124	1-136-159-00	FILM 0.033MF 5% 50V
C125	1-162-105-00	CERAMIC 390PF 10% 50V
C126	1-123-369-00	ELECT 4.7MF 20% 50V
C127	1-136-153-00	FILM 0.01MF 5% 50V
C129	1-136-157-00	FILM 0.022MF 5% 50V
C130	1-136-159-00	FILM 0.033MF 5% 50V
C131	1-107-210-00	MICA 22PF 10% 500V
C132	1-130-481-00	MYLAR 0.0068MF 5% 50V
C133	1-107-167-00	MICA 75PF 5% 500V
C134	1-123-330-00	ELECT 22MF 20% 25V
C135	1-123-381-00	ELECT 2.2MF 20% 50V
C136	1-123-380-00	ELECT 1MF 20% 50V
C301	1-161-494-00	CERAMIC 0.022MF 30% 25V
C302	1-161-494-00	CERAMIC 0.022MF 30% 25V
C303	1-123-321-00	ELECT 220MF 20% 16V
C304	1-123-321-00	ELECT 220MF 20% 16V
C305	1-123-307-00	ELECT 100MF 20% 10V

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
C306	1-123-307-00	ELECT 100MF 20% 10V
C307	1-123-337-00	ELECT 1000MF 20% 25V
C308	1-123-337-00	ELECT 1000MF 20% 25V
C309	1-129-710-00	FILM 0.0047MF 10% 630V
C310	1-130-478-00	MYLAR 0.0039MF 5% 50V
C311	1-130-475-00	MYLAR 0.0022MF 5% 50V
C312	1-130-475-00	MYLAR 0.0022MF 5% 50V
C313	1-123-381-00	ELECT 2.2MF 20% 50V
C314	1-123-379-00	ELECT 0.47MF 20% 50V
C315	1-123-381-00	ELECT 2.2MF 20% 50V
C316	1-123-330-00	ELECT 22MF 20% 25V
C317	1-123-380-00	ELECT 1MF 20% 50V
C318	1-123-306-00	ELECT 47MF 20% 10V
C319	1-136-169-00	FILM 0.22MF 5% 50V
C320	1-123-307-00	ELECT 100MF 20% 10V
C321	1-123-307-00	ELECT 100MF 20% 10V
C322	1-123-307-00	ELECT 100MF 20% 10V
C323	1-123-307-00	ELECT 100MF 20% 10V
C324	1-161-494-00	CERAMIC 0.022MF 30% 25V
CN301	*1-564-505-11	PLUG, CONNECTOR 2P
CN302	*1-564-509-11	PLUG, CONNECTOR 6P
CN303	*1-564-509-11	PLUG, CONNECTOR 6P
CN304	1-562-067-00	(TC-FX205)...SOCKET, CONNECTOR 5P
D101	1-806-968-11	DIODE (LED BLOCK)
D102	1-806-967-11	DIODE (LED BLOCK)
D201	1-806-968-11	DIODE (LED BLOCK)
D202	1-806-967-11	DIODE (LED BLOCK)
D301	8-719-910-77	DIODE HZ7C1L
D302	8-719-910-77	DIODE HZ7C1L
D303	8-719-101-49	DIODE RD5.1EL1
D304	8-719-200-02	DIODE 10E-2
D305	8-719-200-02	DIODE 10E-2
D306	8-719-200-02	DIODE 10E-2
D307	8-719-200-02	DIODE 10E-2
D308	8-719-107-94	DIODE 1SS202-1
D310	8-719-107-94	DIODE 1SS202-1
D311	8-719-107-94	DIODE 1SS202-1
D312	8-719-919-04	DIODE GL-9PR4
HE	8-825-724-00	HEAD, ERASE EF-201-36
HRP	8-825-510-30	HEAD (PP271-3602)
IC101	8-759-905-57	IC CX-174-2
IC102	8-759-912-79	IC IR2E02
IC201	8-759-905-57	IC CX-174-2
IC202	8-759-912-79	IC IR2E02
IC301	8-759-600-02	IC M5218L
IC302	8-759-600-02	(TC-FX220)...IC M5218L

## ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC303	8-759-705-62	IC NJM4562D-D
IC304	8-759-984-11	IC MB84011B
J301	1-507-797-21	JACK, LARGE TYPE (MIC)
J302	1-507-982-11	(TC-FX205)...JACK (LARGE TYPE) (HEADPHONES)
J303	1-507-908-11	JACK, PIN 4P (LINE IN/LINE OUT)
L101	1-408-924-00	MICRO INDUCTOR 10MMH
L102	1-408-929-00	MICRO INDUCTOR 27MMH
L201	1-408-924-00	MICRO INDUCTOR 10MMH
L202	1-408-929-00	MICRO INDUCTOR 27MMH
LPF101	1-231-388-00	FILTER, LOW PASS
LPF201	1-231-388-00	FILTER, LOW PASS
M501	X-3596-108-1	MOTOR ASSY
Q101	8-729-178-55	TRANSISTOR 2SC2785-E
Q102	8-729-178-55	TRANSISTOR 2SC2785-E
Q103	8-729-178-55	TRANSISTOR 2SC2785-E
Q201	8-729-178-55	TRANSISTOR 2SC2785-E
Q202	8-729-178-55	TRANSISTOR 2SC2785-E
Q203	8-729-178-55	TRANSISTOR 2SC2785-E
Q301	8-729-180-92	TRANSISTOR 2SD809-K
Q302	8-729-173-13	TRANSISTOR 2SB731
Q305	8-729-100-13	TRANSISTOR 2SC2001
Q306	8-729-100-13	TRANSISTOR 2SC2001
Q307	8-729-178-55	TRANSISTOR 2SC2785-E
Q308	8-729-173-37	TRANSISTOR 2SA733-P
Q310	8-729-173-37	TRANSISTOR 2SA733-P
R101	1-247-167-00	CARBON 33K 5% 1/4W
R102	1-247-855-00	CARBON 10K 5% 1/6W
R103	1-247-819-00	CARBON 330 5% 1/6W
R104	1-247-866-00	CARBON 30K 5% 1/6W
R105	1-247-871-00	CARBON 47K 5% 1/6W
R106	1-247-131-00	CARBON 1K 5% 1/4W
R107	1-247-147-00	CARBON 4.7K 5% 1/4W
R108	1-247-143-00	CARBON 3.3K 5% 1/4W
R109	1-247-151-00	CARBON 6.8K 5% 1/4W
R110	1-247-131-00	CARBON 1K 5% 1/4W
R112	1-247-139-00	CARBON 2.2K 5% 1/4W
R114	1-247-099-00	CARBON 47 5% 1/4W
R115	1-247-847-00	CARBON 4.7K 5% 1/6W
R117	1-247-857-00	(TC-FX220)...CARBON 12K 5% 1/6W
R118	1-247-853-00	(TC-FX220)...CARBON 8.2K 5% 1/6W
R119	1-247-816-00	(TC-FX220)...CARBON 240 5% 1/6W
R120	1-247-871-00	CARBON 47K 5% 1/6W
R121	1-247-131-00	CARBON 1K 5% 1/4W
R122	1-247-887-00	CARBON 220K 5% 1/6W

## ELECTRICAL PARTS


Ref.No.	Part No.	Description
R123	1-247-807-00	CARBON 100 5% 1/6W
R124	1-247-882-00	CARBON 130K 5% 1/6W
R125	1-247-849-00	CARBON 5.6K 5% 1/6W
R126	1-247-857-00	CARBON 12K 5% 1/6W
R127	1-247-887-00	CARBON 220K 5% 1/6W
R128	1-247-861-00	CARBON 18K 5% 1/6W
R129	1-246-533-00	CARBON 330K 5% 1/4W
R130	1-247-888-00	CARBON 240K 5% 1/6W
R131	1-247-888-00	CARBON 240K 5% 1/6W
R132	1-247-859-00	CARBON 15K 5% 1/6W
R133	1-247-850-00	CARBON 6.2K 5% 1/6W
R134	1-247-807-00	CARBON 100 5% 1/6W
R135	1-247-867-00	CARBON 33K 5% 1/6W
R136	1-247-875-00	CARBON 68K 5% 1/6W
R137	1-247-898-00	CARBON 620K 5% 1/6W
R138	1-247-813-00	CARBON 180 5% 1/6W
R139	1-247-821-00	CARBON 390 5% 1/6W
R140	1-247-835-00	CARBON 1.5K 5% 1/6W
R141	1-247-863-00	CARBON 22K 5% 1/6W
R142	1-247-847-00	CARBON 4.7K 5% 1/6W
R143	1-247-855-00	CARBON 10K 5% 1/6W
R144	1-247-879-00	CARBON 100K 5% 1/6W
R145	1-247-885-00	CARBON 180K 5% 1/6W
R146	1-247-881-00	CARBON 120K 5% 1/6W
R147	1-247-157-00	CARBON 12K 5% 1/4W
R148	1-247-115-00	CARBON 220 5% 1/4W
R149	1-247-839-00	CARBON 2.2K 5% 1/6W
R150	1-247-853-00	CARBON 8.2K 5% 1/6W
R151	1-247-861-00	CARBON 18K 5% 1/6W
R152	1-247-843-00	CARBON 3.3K 5% 1/6W
R153	1-247-851-00	CARBON 6.8K 5% 1/6W
R154	1-247-855-00	CARBON 10K 5% 1/6W
R155	1-247-863-00	CARBON 22K 5% 1/6W
R156	1-247-879-00	CARBON 100K 5% 1/6W
R157	1-247-879-00	CARBON 100K 5% 1/6W
R158	1-247-855-00	CARBON 10K 5% 1/6W
R159	1-247-855-00	CARBON 10K 5% 1/6W
R160	1-247-861-00	CARBON 18K 5% 1/6W
R301	1-806-968-11	(TC-FX205)...THERMISTOR (POSITIVE)
R302	1-806-968-11	(TC-FX205)...THERMISTOR (POSITIVE)
R304	1-247-131-00	CARBON 1K 5% 1/4W
R305	1-247-131-00	CARBON 1K 5% 1/4W
R306	1-247-131-00	CARBON 1K 5% 1/4W
R307	1-247-131-00	CARBON 1K 5% 1/4W
R308	1-247-079-00	CARBON 4.7 5% 1/4W


## ELECTRICAL PARTS

Ref.No.	Part No.	Description
R309	1-247-867-00	CARBON 33K 5% 1/6W
R310	1-247-867-00	CARBON 33K 5% 1/6W
R311	1-247-855-00	CARBON 10K 5% 1/6W
R312	1-247-857-00	CARBON 12K 5% 1/6W
R313	1-247-853-00	CARBON 8.2K 5% 1/6W
R314	1-247-815-00	CARBON 220 5% 1/6W
R315	1-247-123-00	CARBON 470 5% 1/4W
R316	1-247-859-00	CARBON 15K 5% 1/6W
R317	1-247-859-00	CARBON 15K 5% 1/6W
R318	1-247-115-00	CARBON 220 5% 1/4W
R319	1-247-855-00	CARBON 10K 5% 1/6W
R321	1-247-847-00	CARBON 4.7K 5% 1/6W
R323	1-247-855-00	CARBON 10K 5% 1/6W
R325	1-247-859-00	CARBON 15K 5% 1/6W
R326	1-247-855-00	CARBON 10K 5% 1/6W
R327	1-247-883-00	CARBON 150K 5% 1/6W
R328	1-247-139-00	CARBON 2.2K 5% 1/4W
R329	1-247-123-00	CARBON 470 5% 1/4W
R330	1-247-123-00	CARBON 470 5% 1/4W
R331	1-247-123-00	CARBON 470 5% 1/4W
R332	1-247-123-00	CARBON 470 5% 1/4W
R333	1-247-123-00	CARBON 470 5% 1/4W
R334	1-247-139-00	CARBON 2.2K 5% 1/4W
RV101	1-230-716-11	RES, VAR, SLIDE 20K (REC LEVEL)
RV103	1-228-994-00	RES, ADJ, CARBON 10K (PB LEVEL Adj.)
RV104	1-228-995-00	RES, ADJ, CARBON 22K (REC LEVEL Adj.)
RV105	1-228-998-00	RES, ADJ, CARBON 220K (REC BIAS Adj.)
RV201	1-230-716-11	RES, VAR, SLIDE 20K (REC LEVEL)
RV203	1-228-994-00	RES, ADJ, CARBON 10K (PB LEVEL Adj.)
RV204	1-228-995-00	RES, ADJ, CARBON 22K (REC LEVEL Adj.)
RV205	1-228-998-00	RES, ADJ, CARBON 220K (REC BIAS Adj.)
S301	1-554-033-00	SWITCH, SLIDE (RECORD/PLAY BACK)
S302	1-570-154-11	SWITCH, PUSH (4 KEY)(DOLBY NR)
S303	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 1)
S304	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 2)
S305	1-570-154-11	SWITCH, PUSH (4 KEY)(TYPE 4)
S306	1-570-103-11	(TC-FX220)...SWITCH, PUSH(1 KEY)(POWER)
S501	1-570-286-11	SWITCH, LEAF (RECORD)
S502	1-570-286-11	SWITCH, LEAF (HEAD)
S901	1-570-046-21	(TC-FX220:E)...SWITCH, VOLTAGE CHANGE
T302	1-433-296-11	TRANSFORMER, BIAS OSCILLATION
T901	1-448-093-11	(TC-FX220:US,Canadian) ...TRANSFORMER, POWER
T901	1-448-094-11	(TC-FX220:AEP,UK)...TRANSFORMER, POWER
T901	1-448-095-11	(TC-FX220:E)...TRANSFORMER, POWER

## ACCESSORY &amp; PACKING MATERIAL

Part.No.	Description
1-551-734-11	(TC-FX220)...CORD, CONNECTION (RK-74A)
3-318-957-01	(TC-FX220)...INDIVIDUAL CARTON
3-318-958-01	(TC-FX220)...CUSHION (LEFT), LOWER
3-318-959-01	(TC-FX220)...CUSHION (RIGHT), LOWER
3-318-960-01	(TC-FX220)...CUSHION (LEFT), UPPER
3-318-961-01	(TC-FX220)...CUSHION (RIGHT), UPPER
3-701-630-00	BAG, POLYETHYLENE
3-760-404-21	(TC-FX220:US)...MANUAL, INSTRUCTION
3-760-404-11	(TC-FX220:Canadian,AEP,UK,E) ...MANUAL, INSTRUCTION
3-760-404-41	(TC-FX220:AEP)...MANUAL, INSTRUCTION
4-876-352-00	SHEET, PROTECTION
8-890-454-10	(TC-FX220:Canadian)...TAPE (UCX-S)

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation

9-951-687-11

—26—

—25—